

### **REMARKS/ARGUMENTS**

This amendment is filed with a one-month extension of time under the provisions of 37 C.F.R. 1.136(a).

Paragraph [0001] has been amended to update identifying information for the patent incorporated by reference. No new matter is introduced.

Claims 1-11 are pending in the present application and each of the claims presently stand rejected. Independent claims 1,2 and 5 have been amended. No new matter is introduced.

A replacement sheet for Figure 9 is included in the appendix. No new matter is introduced.

Applicants respectfully request reconsideration and allowance of the present claims in view of the foregoing claim amendments and following remarks.

#### **1. Claim rejections under 35 U.S.C. 102 (b).**

Claims 1-4, stand rejected under 35 U.S.C. 102(b) as being anticipated by Patent Number U.S. 6,382,908 to (Keith et al.). The Examiner's rejections under 35 U.S.C. 102(b) are hereinafter traversed and reconsideration is respectfully requested for the following reasons.

Keith et al. illustrate in Figure 1 and describe in col. 2 Lines 61-66 that, "[p]referably, a single vane is integrally cast at opposite root ends thereof with

corresponding portions of the outer and inner bands in a unitary singlet. Two singlet vanes 18 are then brazed together at corresponding axial splitlines 22 to form an integrated two-vane nozzle segment.” The turbine nozzle 10 of Keith et al. is constructed of two separate vane singlets that are brazed together at splitline 22.

Applicants illustrate in Figure 2 and describe in paragraph [0006] that, “[v]anes are typically investment cast of high-strength Nickel or Cobalt alloys and may contain multiple airfoils within a single casting. Vane castings with multiple airfoils are referred to as cast vane clusters and have the advantage of reducing the number of inter-platform interfaces in a turbine stage.” The vane cluster of Applicants’ present invention is integrally cast: not brazed.

Applicants’ amended claims 1-4 presently distinguish over Keith et al. by specifying a ‘cast vane cluster’.

## **2. Claim rejections under 35 U.S.C. 103(a).**

Claims 5-11 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Keith et al. as applied to claims 1-4 in view of Patent Number U.S. 5,637,239 to (Adamski et al.). The Examiner’s rejections under 35 U.S.C. 103(3) are hereinafter traversed and reconsideration is respectfully requested for the following reasons.

Adamski et al. illustrate a tubular electrode embodiment in Figure 2 and teach in column 4 lines 13-21 that, “[h]owever, the tubular supporting member design utilized to evaluate the rotary EDM process may not provide the necessary flexibility and/or

clearances for turbine airfoil applications. Thus, Applicants suggest fabricating a supporting member[,] which will provide the necessary clearances for turbine airfoils. For example, an electrode with a flat, plate-like supporting member, as shown in Fig. 1, may be used. The flat supporting member may be secured to a tool holder by means, such as screws.” Also, Adamski et al. illustrate an electrode with a flat support in Figure 1, and teach in col. 3 lines 7-9 that, “[r]otation of the electrode 2 must be concentric with the rotary EDM axis to ensure generation of a true curved hole (coaxial centerlines).”

Applicants’ cast vane clusters provide minimal clearance between airfoils, especially at the trailing edges 54, as illustrated in Applicants’ Figures 3 and 6. Applicants disclose in paragraph [0007] of their application that, “[p]referably, the multitude of cooling holes are drilled from the direction of the airfoil trailing edge and at an acute angle to the cast vane cluster surfaces. The drilling direction and angle are necessary to ensure that the secondary fluid stream is discharged in a substantially rearward direction. This optimizes the cooling effectiveness of the secondary fluid stream and reduces the aerodynamic losses in the primary fluid stream.”

Adamski et al, teach away from using a tubular electrode as illustrated in Figure 2 for airfoils. An electrode with a flat support of Figure 1 is incapable of concentric rotation with the rotary EDM axis, due to the limited clearance between airfoils, especially at the trailing edges. Unintentional contact between an electrode and a cast vane cluster may cause damaging material removal and/or a short circuit of the spark gap.

Applicants assert that at the time the invention was made, there was no reasonable expectation of success for combining the teachings of Keith et al. with the

teachings of Adamski et al. Therefore, there was no motivation to combine the teachings at the time Applicants' invention was made.

In view of the foregoing, Applicants respectfully request withdrawal of the rejections against claims 1-11 and allowance thereof. The Examiner is cordially invited to telephone Applicants' agent if it appears a telephone discussion would help resolve any outstanding matters or place the application in even better condition for allowance. Please charge any required fees to the Deposit Account of record.

Respectfully submitted,

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